

## Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



# **SCHEDULING THE ARRIVAL OF TOBACCO AT AUCTION WAREHOUSES**

---

ARS-S-12

May 1973



Trade names and the names of commercial companies are used in this publication solely to provide specific information. Mention of a trade name or manufacturer does not constitute a guarantee or warranty of the product by the U. S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

## ACKNOWLEDGMENTS

The authors wish to give special thanks to Leo Matthews, scheduler at Carolina Warehouse in FuquayVarina, N. C., Everett Clayton, Larry Knott, and Clarence Knott (deceased), owners; and the growers who sold their tobacco at the warehouse. Without their assistance, scheduling as described herein would not have become a standard operating procedure.

The authors also wish to thank Hardin Sugg, Planters' Warehouse, Greenville, N. C.; Lawrence Wallace (deceased), Wallace Warehouse, Smithfield, N. C.; Chandler Watkins (deceased), Chandler Watkins, Jr., Joe Hamme, and "Pookey" Curin, Johnson's High Price Warehouse; and David Mitchell, Mitchell's Warehouse, Oxford, N. C.; and the many warehouse friends who have adopted scheduling as a standard operating procedure.

Thanks also go to John Cyrus, Coordination of Crop Services, North Carolina Department of Agriculture, who assisted in implementing scheduling; to the Commissioners of Agriculture of Florida, Georgia, North Carolina, South Carolina, and Virginia for recommending scheduling; to the Industry-Wide Flue-Cured Marketing Committee for recommending scheduling; and to the Bright Belt Warehouse Association Board of Governors who voted to adopt scheduling.

# CONTENTS

	Page
Summary . . . . .	1
Introduction . . . . .	1
Planning the schedule . . . . .	2
Warehouse scheduling procedures . . . . .	3
Preparing the rotation table . . . . .	3
Determining pounds to be delivered . . . . .	3
Scheduling tobacco arrivals . . . . .	4
Scheduling through fieldmen . . . . .	5
Receiving tobacco scheduled for unloading . . . . .	7
Benefits of the system . . . . .	10

# SCHEDULING THE ARRIVAL OF TOBACCO AT TOBACCO WAREHOUSES

By Albert H. Graves and Kenneth R. Forrest<sup>1</sup>

## SUMMARY

Researchers in Agricultural Research Service developed a system for scheduling tobacco at auction warehouses. Full-scale tests of the system were conducted, in cooperation with growers and warehouse managers, in a total of six warehouses in North Carolina markets during the 1969 and 1970 marketing seasons. The results showed benefits to both warehousemen and growers.

A warehouseman schedules by contacting the grower and arriving at a mutual agreement on the number of sheets of tobacco to be delivered and the time the grower will bring his tobacco to the warehouse. He places this information in a scheduling book and gives the grower a "scheduling card." The grower and the warehouseman then know the exact time and date that the grower will have his sheets of tobacco unloaded for sale.

When the grower arrives at the warehouse with his tobacco at the assigned time, he presents his scheduling card to the ticket maker, who then writes the appropriate information on the tobacco sale bill and scale tickets. This procedure minimizes delays at the scale when the tobacco is weighed.

To further minimize delays at the scale, the grower removes the cover from his load of tobacco so that his truck will be ready for unloading. He arranges his tobacco sale bill and scale tickets to correspond with the desired unloading sequence and gives them to the weighmaster with instructions as to unloading sequence. When the growers unloading turn arrives, he immediately moves his truck to the unloading dock. After unloading, he moves

his truck to the parking area provided, so there will be no delay at the dock for the next truck to be unloaded.

The scheduling is of tremendous benefit to the warehouseman and to the grower. With 60,000 growers selling 1.2 billion pounds in about 400 warehouses, there is a definite potential for economic benefits. Four areas in which economic benefits occur as a result of scheduling are (1) savings in warehouse labor costs by eliminating the need for a second shift for the receiving operation; (2) savings in electric power costs by receiving only during the daylight hours; (3) savings to the grower, in the form of value for his personal time, by eliminating waiting in line to unload his tobacco; and (4) savings in labor costs to the grower, in the form of additional time to supervise and enhance productivity of farm labor crew, by eliminating lengthy delays at warehouse during deliveries of tobacco.

The total potential savings to tobacco growers and warehousemen in the flue-cured area as a result of scheduling tobacco at the warehouse are estimated at almost \$38 million annually.

In addition to the potential economic benefits accruing to both warehousemen and growers as a result of scheduling, other important benefits are gained that cannot be measured in dollar values. A decided reduction in frustrations, anxieties, and tensions accompanies a well-planned and executed scheduling system. Although these benefits cannot be documented in monetary terms, they are just as real as the dollar savings.

## INTRODUCTION

In past years when tied tobacco was received at a tobacco auction warehouse in a northern flue-cured belt, the grower could park his truck inside the warehouse and start

<sup>1</sup>Industrial engineer, and engineering technician, respectively, Southern Region, Agricultural Research Service, North Carolina State University, Raleigh.



packing tobacco in a basket on a buggy. However, in 1967, warehousemen began receiving untied tobacco and their unloading operation became more complex. The grower delivering untied tobacco had to park his truck in long lines in front of the receiving doors and wait to be unloaded.

The untied tobacco was "built up" to 200 pounds per sheet, which slowed the receiving rate at a warehouse to about one sheet a minute. Thus, for a warehouse flooring 1,200 sheets of tobacco, 20 hours were required to floor the sheets for each sale. The waiting time for many growers was quite long because of this slow receiving rate.

The practice of building up each sheet to 200 pounds was discontinued after only 1 year. However, the number of waiting trucks and the growers' waiting time became even greater, because the growers could deliver tobacco much faster than the total of 80 million pounds a week that processing plants could handle. Often, warehousemen floored tobacco for three sales ahead. Growers frequently had to wait in line for as long as a week. Figure 1 shows growers waiting to deliver tobacco.

Before the 1969 tobacco marketing season, researchers in the Agricultural Research Service developed a system to schedule the arrival of growers' tobacco at auction warehouses. The system was designed to improve the work activities of the warehouse labor force and the

service to growers by eliminating waiting to unload tobacco (fig. 2).

A full-scale test of the system was conducted during the 1969 marketing season in cooperation with growers and the managers of Carolina Warehouse, Fuquay-Varina, N. C. During the 1970 marketing season, the tests were expanded to include three of the four warehouses in the Fuquay-Varina market and two warehouses in the Oxford, N. C., market. Results of the tests showed mutual benefits to both warehousemen and growers who adopted scheduling.

This report presents guidelines, based on the results of 2-year tests, for use by warehousemen who wish to schedule the arrival of tobacco at their warehouses.

## PLANNING THE SCHEDULE

With scheduling, the arrival of tobacco to be delivered to the warehouse during the season is scheduled shortly before the market opens. This schedule is confirmed by the grower on a weekly basis as the season progresses.

The warehouseman must decide whether to schedule by pounds or by sheets of tobacco. On either basis, he should schedule only 85 to 90 percent of the tobacco allocated to the warehouse for a sale. Space must be provided on the warehouse sales floor for the tobacco of every grower scheduled to bring tobacco to the warehouse. Otherwise, the growers sched-



Figure 1.—Trucks waiting to be unloaded—before scheduling system was adopted.

BN-38987





Figure 2.—Trucks waiting to be unloaded—after scheduling system was adopted.

uled to unload last could be pushed off to the next sale and would lose confidence in the system and discontinue adherence to the guidelines. Also, allowances must be made for selling “house tobacco,”<sup>2</sup> for sheets having average weights higher than anticipated and for small lots of growers’ tobacco when completing the pounds available on a marketing card.<sup>3</sup>

The most important man in a scheduling operation is the warehouse scheduler. The warehouseman must assign one person the authority of scheduling all the tobacco into the warehouse. This scheduler must be firm and fair, treating everyone alike. He must be tactful and diplomatic. His authority must be complete and final. This enables him to make decisions that will result in efficient receiving.

The scheduler must work closely with the warehouse manager to coordinate the flooring of the house tobacco with the receiving of tobacco from the growers and to schedule initial receiving rates, work breaks, and the lunch period.

## WAREHOUSE SCHEDULING PROCEDURES

To schedule the arrival of tobacco at the warehouse, the scheduler must determine the number of growers who will sell at the ware-

<sup>2</sup> Tobacco owned by the warehouse.

<sup>3</sup> Agricultural Stabilization and Conservation Service issues acreage and marketing quotas for tobacco, and these quotas must be shown at time of delivery to the warehouse.

house during the season and the amount of tobacco that each grower plans to deliver for sale.

Generally, growers bring tobacco to the warehouse 1 to 3 days before it is offered for sale. Thus, tobacco arrival rates are directly related to daily warehouse sales. In the system described in this report, the scheduler facilitates the scheduling of tobacco arrivals by assigning specific selling dates to the growers in a rotation table, which is described below.

## Preparing the Rotation Table

The warehouseman determines which day of the week the grower will sell. Remember to schedule only about 90 percent of the sale. Based on 4 sales days per week, a warehouseman divides his customer growers into four groups—A, B, C, and D—with each group selling 1 day per week. The groups rotate each week between particular days of the week, as shown in table 1, with each grower selling an equal number of times.

## Determining pounds to be Delivered

The scheduler determines the anticipated volume of tobacco in pounds per acre per day that his customers will sell each week. Since the average yield for an acre of tobacco is 2,000 pounds, he divides 2,000 by 8 sale weeks, arriving at a total of 250 pounds per acre per week that each customer can sell. For example, a customer who grows 5 acres of tobacco can

TABLE 1.—Weekly rotation of groups through 8 weeks with all growers selling on the same number of Mondays

Week	Monday	Tuesday	Wednesday	Thursday
	Group	Group	Group	Group
1	A	B	C	D
2	B	A	D	C
3	D	C	B	A
4	C	D	A	B
5	A	B	C	D
6	B	A	D	C
7	D	C	B	A
8	C	D	A	B

be assured of selling 1,250 pounds (5 acres  $\times$  250 pounds per acre) each week. Some allowances will have to be made for growers on extremely large or small farms. A grower with a very large tobacco allotment (150,000 to 250,000 pounds) might be put into two groups, A and C, so that he can sell twice each week.

Since growers will deliver their tobacco in sheets, the scheduler converts the pounds of tobacco to number of sheets. Assuming an average weight of 167 pounds per sheet of tobacco, a grower who wishes to sell 1,670 pounds of tobacco can be expected to deliver it in 10 sheets.

After the scheduler has determined the number of growers he will serve during the season and the number of sheets of tobacco he will handle, he has completed all the planning he can until an opening date and the allowable selling time for his warehouse is announced by the Industry-Wide Flue-Cured Marketing Committee.

## Scheduling Tobacco Arrivals

Since several factors affect scheduling, final details are worked out only 1 week in advance of sale. The Industry-Wide Flue-Cured Marketing Committee may set the selling time for a belt for 1 week or several weeks. Because of the amount of tobacco already in the marketing system, this procedure helps to balance the quantity of tobacco to be sold with the quantity that processing plants can handle. The scheduler should plan to receive in a week only the amount of tobacco that will be purchased and loaded out during the week. Most

warehousemen will floor only enough tobacco for two sales, because flooring more would cause an excessive congestion of trucks and laborers during the loadout operation.

Before beginning his weekly scheduling, the scheduler must determine the rate at which tobacco can be received at the warehouse. An efficient operation can easily attain a receiving rate of 150 sheets per hour.

We recommend that the scheduler use scheduling sheets similar to the one shown in figure 3. These sheets can be kept in a standard loose-leaf notebook. If fieldmen are used, they may list the information on these sheets; however, the scheduler is responsible for the accuracy of this information.

Our study showed that the scheduler should confirm the schedule each Monday for the following week by contacting growers either by telephone or in person, making any necessary adjustments.

Upon contacting the first growers, the scheduler fills out the appropriate spaces in the scheduling sheet to show the grower's name, the date and time of delivery, the number of sheets to be delivered, and the time of the sale during which this tobacco will be sold. The scheduler then fills out a scheduling card (fig. 4) and gives it to the grower as notice of when the grower is scheduled to deliver tobacco for a specific sale, and the amount of tobacco he is to deliver.

The scheduler continues to confirm schedules with the growers until approximately 90 percent of the sales allocation has been scheduled. The time increments in the schedule are broken on approximately 150 sheet intervals. The first 150 sheets scheduled will be unloaded during the first working hour; the second 150 sheets during the second working hour, and so on until the daily allotment is reached.

As the scheduler contacts growers, he will complete scheduling sheets covering all of the days for 1 week in advance.

One week later, the scheduler should refer to his table of weekly group rotations (table 1) and rotate the growers by groups. The scheduler also should rotate before scheduling for the second week the arrival times for growers for each day, so that each grower will have an equal opportunity to benefit from any ad-





grower in a group will sell each week, and then to proceed with his scheduling, accordingly.

The warehouseman provides each fieldman with two sets of forms for each sale day: (1) A scheduling sheet (fig. 3) to list the growers in one group, the number of sheets the group will deliver, and the date and time of delivery; and (2) a scheduling card (fig. 4) to fill out for the grower.

### Example

Assuming a warehouseman operates under an allotment to sell 275,550 pounds of tobacco at each sale. He is allowed 4 sale days (Monday through Thursday) each week for an 8-week marketing season. The warehouseman converts the pounds of tobacco for sale to 1,650 sheets of tobacco (275,550 pounds ÷ 167 pounds per sheet). He decides to "book" 1,500 sheets, which is approximately 90 percent of the sale, through four fieldmen. Each fieldman is responsible for scheduling the arrival of 375 sheets (1,500 sheets ÷ 4 fieldmen). The warehouseman has handling equipment and labor available to receive and floor 150 sheets of

tobacco each working hour; therefore, he can plan to receive the 1,500 sheets of tobacco in the sale within 10 working hours. On this basis, the 375 sheets of tobacco scheduled by each of the four fieldmen will represent 2½ hours of the total unloading time for the sale (10 hours ÷ 4 fieldmen).

The warehouseman prepares and distributes a table of recommended weekly group rotation to each of the four fieldmen. He then assigns each fieldman a number (1 through 4) and four groups of growers (A-D, E-H, I-L, or M-P). Using the table, fieldman No. 1 determines his part in scheduling for the entire marketing season in his assigned area. He schedules growers in group A to deliver a total of 375 sheets of tobacco between 7:00 a.m. and 9:30 a.m. on Monday of the first unloading week, to deliver the same amount between 9:30 a.m. and noon on Tuesday of the second week, and so on, according to the group rotation table provided him. Likewise, the other fieldmen determine their responsibility and proceed with their scheduling. They then contact the growers in their group and fill out their scheduling sheets and cards.

TABLE 2.—Recommended schedule for the rotation of unloading times for 16 grower groups contacted by four fieldmen

Unloading week and fieldman (by No.)	Unloading time <sup>1</sup>	Unloading day			
		Monday	Tuesday	Wednesday	Thursday
		Group	Group	Group	Group
1st and 5th week:					
1.....	7:00 a.m. to 9:30 a.m.	A	B	C	D
2.....	9:30 a.m. to 12:00 p.m.	E	F	G	H
3.....	1:00 p.m. to 3:30 p.m.	I	J	K	L
4.....	3:30 p.m. to 6:00 p.m.	M	N	O	P
2nd and 6th week:					
4.....	7:00 a.m. to 9:30 a.m.	N	M	P	O
1.....	9:30 a.m. to 12:00 p.m.	B	A	D	O
2.....	1:00 p.m. to 3:30 p.m.	F	E	H	G
3.....	3:30 p.m. to 6:00 p.m.	J	I	L	K
3rd and 7th week:					
3.....	7:00 a.m. to 9:30 a.m.	L	K	J	I
4.....	9:30 a.m. to 12:00 p.m.	P	O	N	M
1.....	1:00 p.m. to 3:30 p.m.	D	C	B	A
2.....	3:30 p.m. to 6:00 p.m.	H	G	F	E
4th and 8th week:					
2.....	7:00 a.m. to 9:30 a.m.	G	H	E	F
3.....	9:30 a.m. to 12:00 p.m.	K	L	I	J
4.....	1:00 p.m. to 3:30 p.m.	O	P	M	N
1.....	3:30 p.m. to 6:00 p.m.	C	D	A	B

<sup>1</sup> Based on receiving of 150 sheets of tobacco per hour in a 10-hour work day.

## RECEIVING TOBACCO SCHEDULED FOR UNLOADING

For the scheduling system to operate successfully, the grower must not be allowed to enter the warehouse before his scheduled time. When he arrives, he should park his truckload of tobacco outside the warehouse, as shown in figure 5, taking special care not to block the entrance door. He then takes his scheduling card to the scheduling desk to determine his sequence of entry (fig. 6).

After the grower checks in with the scheduler, he drives his truck into the warehouse and stops at the desk near the entrance (fig. 7). He shows his scheduling card to the ticketmaker who ascertains from the card the number of sheets of tobacco the grower has scheduled. The grower then gives his ASCS marketing card to the ticketmaker, who imprints the marketing card information and the name and number of the warehouse on the tobacco sale bill (fig. 8). The ticketmaker (fig. 9) completes the tobacco sale bill, except for weights of the sheets of tobacco. He then fills out a scale ticket (fig. 10) for each sheet to be sold, as indicated on the tobacco sale bill. This procedure minimizes delays at the scale when the grower's tobacco is weighed.

After leaving the ticketmaker's desk, and while waiting to move to the unloading dock,



BN-39102

Figure 5.—Truckloads of tobacco parked outside warehouse, in a diagonal position in relation to driveway, ready to enter at growers' scheduled times. (Note trucks do not block entrance door.)



BN-39101

Figure 6.—Grower presenting his scheduling card to scheduler to determine his sequence of entry into warehouse.



BN-39100

Figure 7.—The grower stops his truck inside the warehouse, and presents his scheduling card and ASCS marketing card to the ticketmaker.

BILL NO. <div style="font-size: 24pt; font-weight: bold;">853</div>		BALANCE BEFORE SALE (Based on 110% of Quota) <div style="text-align: right;">Lbs.</div>		<b>TOBACCO SALE BILL</b>			SALE DATE	
				UNTIED <input type="checkbox"/>				
				TIED <input type="checkbox"/>				
STATE	COUNTY	FARM NO.		NAME AND ADDRESS OF WAREHOUSE				
OPERATOR SHARE		T E N A N T	FC NO.		NAME AND ADDRESS (Exactly as shown on identification card)			
			SHARE					
		%			%			

LINE	BASKET NO.	BUYER AND GRADE	LINE	POUNDS	PRICE	AMOUNT
1			1			\$
2			2			
3			3			
4			4			
5			5			
6			6			
7			7			
8			8			
9			9			
10			10			
11			11			
12			12			

BALANCE AFTER SALE (Based on 110% of Quota) →	Lbs.		← TOTALS →	\$
REMARKS:		G.A.C.C.		
		Whse. Charges		
		Auction Fees		
		Commissions (2½%)		
DELIVERED TO STABILIZATION		Advances		
		Tobacco Associates		
POUNDS	AMOUNT			
	\$	\$		

853

WAREHOUSE COPY

Figure 8.—Sample tobacco sale bill.





BN-39099

Figure 9.—Ticketmaker filling out tobacco sale bill and scale tickets.

the grower should remove the tarp or plastic sheets and any unused tobacco replacement sheets from his truck so that the tobacco will be ready to unload (fig. 11). When the grower's truck is one or two trucks back from the unloading dock, he should arrange his tobacco sale bill and scale tickets to match the order

in which the sheets are to be unloaded. He then gives them to the weighmaster.

The grower should be alert to position his truck for unloading as soon as the truck ahead is clear of the unloading dock. Failure to move forward promptly delays tobacco receiving more than any other factor and creates an uneven flow of tobacco through the receiving system.

As soon as the grower positions his truck at the unloading dock, he should leave his truck immediately and tell the unloading crew which sheets of tobacco to take off first and any other appropriate instructions.

After the last sheet is unloaded from the truck, the grower should drive his empty truck forward, away from the unloading dock, so that the next grower can drive his loaded truck into position without delay. After the grower parks his truck in the area provided, he can then return to the weighmaster and obtain either a customer's copy of the tobacco sale bill or a corresponding receipt form. Most warehouses require verification before replacement sheets can be obtained from the sheet room. When the grower obtains the replacement sheets, he has completed the receiving operation.

BILL NO.		LINE NO.	MONTH	DAY	<b>TOBACCO INSPECTION CERTIFICATE</b> THIS TOBACCO, INSPECTED UNDER THE TOBACCO INSPECTION ACT BY THE U. S. DEPARTMENT OF AGRICULTURE, IS CERTIFIED TO BE:	
PLANTER					<b>TYPE 11B</b> <b>GRADE</b>	
CAROLINA WHSE. FUQUAY-VARNEY, N. C. 731					(DATE)	(INSPECTOR U.S.D.A.)
					LBS.	
					REWEIGHT	

Figure 10.—Scale ticket for one sheet of growers tobacco.



Figure 11.—Before truck reaches unloading dock, tarp is removed.

## BENEFITS OF THE SYSTEM

When tobacco is received in an orderly manner, the grower and warehouseman both benefit in many ways.

The warehouseman who uses the scheduling system is relieved of the chaotic conditions caused by long lines of trucks waiting to be unloaded. With scheduling, no more than 10 trucks will arrive at his warehouse during a given hour. Since the warehouseman knows exactly when the growers will arrive to unload their trucks, and the number of incoming trucks, he can plan ahead to assure maximum use of his labor for both receiving and other warehouse operations.

Under the old system of receiving tobacco, only about five growers' trucks could be unloaded per hour, requiring, usually, two labor shifts. With such an operation, the direct labor cost for receiving averaged almost \$1.4 million. (This figure represents the combined cost for 400 warehouses, the approximate number serving the flue-cured tobacco area.) This cost is based on two shifts with an average of nine employees each and an average wage rate of \$1.60 per hour, and on the receipt of a total volume of 1.2 billion pounds of tobacco during the season, receiving at the average rate of 12,525 pounds per hour (15 sheets/trip/grower  $\times$  167 lb./sheet = 2,505 lb./trip/grower, 2,505 lb./trip/grower  $\times$  5 growers/hr. = 12,525 lb./hr.)

$$\begin{aligned} &1.2 \text{ billion lb.} \div 12,525 \text{ lb./hr.} \\ &= 95,808 \text{ hr.} \\ &95,808 \text{ hr.} \times 9 \text{ employees} \\ &= 862,272 \text{ hr.} \\ &862,272 \text{ hr.} \times \$1.60/\text{hr.} \\ &= \$1,379,635. \end{aligned} \quad (1)$$

With the scheduling system, unloading is more efficient and 10 growers' trucks can be unloaded per hour, and only one labor shift is needed to receive all the tobacco for a sale. Therefore, if all the warehousemen in the flue-cured area eliminate the need for a second shift, the labor cost shown above could be reduced by half, for a total saving of approximately \$689,818 annually.

$$\begin{aligned} &1.2 \text{ billion lb.} \div 25,050 \text{ lb./hr.} \\ &= 47,904 \text{ hr.} \\ &47,904 \text{ hr.} \times 9 \text{ employees} \\ &= 431,136 \text{ hr.} \\ &431,136 \text{ hr.} \times \$1.60/\text{hr.} \\ &= \$689,818. \end{aligned} \quad (2)$$

Many warehousemen who operate two shifts and receive tobacco at night as well as during the day have costs of several hundred dollars a month for electric power. However, if they schedule tobacco arrivals and operate with only one shift, they can handle all their operations during the daylight hours and should save about \$100 per month. If all the operators of warehouses in the flue-cured area schedule tobacco arrivals and operate one shift only, they could save an overall total of approximately \$80,000 annually in power costs. This potential saving is based on an average electric power usage per warehouse of approximately 144 kilowatt hours (kw.-hr.) during a second-shift operation, at the rate of 2.68¢ per k.-hr., for an average of 26 operating days per month for the 8-week season.

$$\begin{aligned} &144 \text{ kw.-hr.} \times 2.68¢/\text{kw.-hr.} \\ &= \$3.86. \\ &\$3.86 \times 26 \text{ days} \\ &= \$100. \\ &\$100 \times 2 \text{ months} \\ &= \$200. \\ &\$200 \times 400 \text{ warehouses} \\ &= \$80,000. \end{aligned} \quad (3)$$

The grower delivering his tobacco to an auction warehouse using the scheduling system receives much better service and saves not only

in time, cost, and farm efficiency, but also in frustrations. He no longer has to wait in a line of trucks for several hours or days before entering the warehouse to unload his tobacco. Instead, he arrives at his scheduled time, unloads, and is ready to return to his farm within 1 hour or less. Usually, he completes unloading within about 30 minutes.

This fast and efficient service saves the grower, at an absolute minimum, at least 5 hours of his personal time that he had to wait to unload under the old system for each of his weekly trips to the warehouse during the 8-week season. Assuming a value of \$2.50 per hour for his waiting time, each grower who delivers tobacco to a warehouse that schedules arrivals will save a minimum of \$100 in personal time during the season.

$$\begin{aligned} & \$2.50/\text{hr.} \times 5 \text{ hr.} \\ & = \$12.50. \\ & \$12.50 \times 8 \text{ trips} \\ & = \$100. \end{aligned} \quad (4)$$

If all the warehouses in the flue-cured area will schedule arrivals, the potential overall saving to growers in their personal time alone will be a minimum of about \$6 million annually.

$$\begin{aligned} & 1.2 \text{ billion lb.} \div 2,505 \text{ lb./trip/grower} \\ & \quad (15 \text{ sheets/trip, } 167 \text{ lb./sheet}) \\ & = 479,045 \text{ trips.} \\ & 479,045 \text{ trips} \times \$12.50/\text{trip} \\ & = \$5,988,062. \end{aligned} \quad (5)$$

Many growers have indicated that their greatest cost saving through participation in the scheduling system has been in increased efficiency at the farm. Now that they are no longer required to spend so much of their time waiting at the warehouse, they can use this additional time to supervise their labor crews at the farm and keep them actively engaged in harvesting, "barning" tobacco, and other necessary farm activities.

While studies were not made of savings at farms, many of the growers who had labor crews at their farms (about half the growers in the flue-cured area) indicated that they saved about \$26 per hour for time gained for supervising the labor crew instead of waiting at the warehouse to unload. This estimated saving is based on an average of 14 workers per labor crew, at an average wage rate of

\$1.85 per hour for 5 hours—the minimum waiting time ( $14 \text{ workers} \times \$1.85/\text{hr.} = \$25.90$ ). When the scheduling system is adopted throughout the flue-cured area, growers who have labor crews on their farms should save an overall minimum of more than \$31 million annually in labor costs. This potential saving is based on an overall total of 239,523 trips out of the warehouse during the season [479,045 trips made by growers  $\div 2$  (because only half the growers had labor crews at their farms) = 239,523 trips] at \$130 per trip ( $5 \text{ hr.} \times \$26/\text{hr.}$ ).

The combined economic benefits to warehousemen and growers, assuming full participating throughout the flue-cured belt, is estimated at almost \$38 million.

One important benefit to growers and warehousemen through the scheduling system cannot be recorded in terms of monetary values—the saving in frustrations and anxieties.

Many growers arrived at a warehouse on a Thursday or a Friday only to observe a long line of trucks ahead of them. At that time, they locked their trucks and went home or waited with their trucks until the warehouse started flooring sales for the following week. Flooring next week's sales usually started later than planned, because congestion in the warehouse delayed the tobacco-moving contractor in moving tobacco from the sales floor. Often, when the grower finally moved his truck to, or just inside, the warehouse, the receiving crew stopped unloading and the warehouse employees were closing the door because all the tobacco had been unloaded that the warehouse was allotted to sell for the following week. The grower must wait then another week before the tobacco could be unloaded. These frustrating experiences often caused tempers and upset nerves for both growers and warehousemen. Although relief from these experiences cannot be documented in monetary values, it is an important benefit derived from a well-planned and executed scheduling system.

Because of the magnitude of the savings to both warehousemen and growers, and the ability to achieve such savings without significant expense for equipment or changing the structure of the warehouse, the adoption of the scheduling system is being widely acclaimed and adopted.



U. S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
SOUTHERN REGION  
P. O. BOX 53326  
NEW ORLEANS, LOUISIANA 70153

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300.

POSTAGE AND FEES PAID  
U. S. DEPARTMENT OF  
AGRICULTURE  
AGR 101

